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## **Self-Esteem, Self-Efficacy, and Social Support as Predictors of Communicative Participation in Adults Who Stutter**

Michael Boyle

*Montclair State University*, [boylemi@mail.montclair.edu](mailto:boylemi@mail.montclair.edu)

Carolina Beita-Ell

*Montclair State University*

Kathryn M. Milewski

*Montclair State University*

Alison N. Fearon

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## Research Article

# Self-Esteem, Self-Efficacy, and Social Support as Predictors of Communicative Participation in Adults Who Stutter

Michael P. Boyle,<sup>a</sup> Carolina Beita-ElI,<sup>a</sup> Kathryn M. Milewski,<sup>a</sup> and Alison N. Fearon<sup>a</sup>

**Purpose:** This study aimed to identify contributors to communicative participation in adults who stutter. Specifically, it was of interest to determine whether psychosocial variables of self-esteem, self-efficacy, and social support were predictive of communicative participation beyond contributions of demographic and speech-related variables.

**Method:** Adults who stutter ( $N = 339$ ) completed an online survey that included measures of communicative participation, self-esteem, self-efficacy, social support, self-reported speech-related variables (speech usage, number of years stuttering, history of treatment and self-help support group participation for stuttering, and physical speech disruption severity), and demographics (age, sex, living situation, education, and employment status). Hierarchical regression was performed for prediction of communicative participation, in addition to calculating Spearman correlations between social roles variables,

communicative participation, and physical speech disruption severity.

**Results:** After controlling for demographic and speech-related variables, self-esteem, self-efficacy, and social support each significantly predicted communicative participation in adults who stutter. Large correlations were observed between communicative participation and measures of social roles, whereas medium correlations were observed between physical speech disruption severity and measures of social roles.

**Conclusions:** Communicative participation in adults who stutter is associated with a variety of demographic, speech-related, and psychosocial variables. Speech-language pathologists should be aware of predictors of communicative participation such as self-esteem, self-efficacy, and social support, in addition to severity of physical speech disruptions. They should consider and evaluate these factors in clients who stutter and target them in treatment if necessary.

Recognizing that health conditions and outcomes are inextricably linked with multiple factors aside from physical impairments, the World Health Organization developed the International Classification of Functioning, Disability and Health (ICF). The ICF is a biopsychosocial classification system in which “functioning and disability is conceived as a dynamic interaction between health conditions (diseases, disorders, injuries, trauma, etc.) and contextual factors” (World Health Organization, 2001, p. 8). The ICF discusses several components related to a health condition: body functions and structures, activity and participation, environmental factors, and personal factors. The stuttering literature to date provides little

documentation of communicative participation in adults who stutter using validated and focused tools. This study sought to examine this topic and analyze the variables of self-esteem, self-efficacy, and social support as predictors of communicative participation in adults who stutter. This introduction will discuss the importance of communicative participation in the field of speech-language pathology, the impact of stuttering on communicative participation, and variables that are hypothesized to predict communicative participation in people who stutter (PWS).

## *Communicative Participation and Its Applications to Speech-Language Pathology*

Communicative participation can be defined as “taking part in life situations where knowledge, information, ideas, or feelings are exchanged” (Eadie et al., 2006, p. 309). Examining variables like communicative participation within the ICF framework is critical for speech-language pathologists’ (SLPs) ability to provide adequate services. The

<sup>a</sup>Department of Communication Sciences and Disorders, Montclair State University, NJ

Correspondence to Michael P. Boyle: boylemi@montclair.edu

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presence of a disability and the contextual factors associated with it can strongly affect an individual's level of communicative participation (Eadie et al., 2006). Reduced communicative participation may result in negative consequences including social isolation, loss of employment, and/or difficulty in accessing health care and other services (Eadie et al., 2006). Reduced communicative participation would also be expected to negatively impact individuals' ability to fulfill their social roles and their satisfaction with those roles (Yorkston, Baylor, & Amtmann, 2014). The ICF can help SLPs gain a deeper understanding of the impact of a communication disorder on an individual and provides a framework for identifying relevant assessment strategies and treatment targets (Eadie, 2001). For example, in assessment of a client with a voice disorder, investigating the function of the vocal folds would be supplemented with information regarding how the client perceives his or her communication disorder, how the disorder affects daily activities, and how others in the client's environment perceive the disorder.

The American Speech-Language-Hearing Association (ASHA, 2016) scope of practice utilizes the ICF framework for describing the roles of the SLP. Despite ASHA adopting the ICF, research has shown that it is rarely used by clinicians and uncommon to find outside of a university setting due to limited tools measuring ICF variables (Ma, Threats, & Worrall, 2008), in addition to time and productivity constraints, limitations in the controlled clinical setting itself, and documentation challenges (Torrence, Baylor, Yorkston, & Spencer, 2016). To address the issue of limited tools that evaluate communicative participation, a series of qualitative studies involving individuals with multiple sclerosis, spasmodic dysphonia, stuttering, stroke, Parkinson's disease, laryngectomy, and amyotrophic lateral sclerosis (Baylor, Burns, Eadie, Britton, & Yorkston, 2011; Baylor, Yorkston, Eadie, Miller, & Amtmann, 2009; Yorkston et al., 2007, 2008) was conducted to generate and refine items to be included in the Communicative Participation Item Bank (CPIB; Baylor et al., 2013). The CPIB ultimately contained 46 items, and a 10-item short form was also developed that could be used in research and clinical settings (Baylor et al., 2013). There was good reliability demonstrated between the 46-item bank and the 10-item form (Baylor et al., 2013).

The CPIB has been used in several quantitative studies with different populations, and findings suggest that communicative participation is associated with multiple factors beyond physical impairment (Baylor et al., 2011; Baylor, Yorkston, Bamer, Britton, & Amtmann, 2010; Bolt, Eadie, Yorkston, Baylor, & Amtmann, 2016; Ward, Jarman, Cornwell, & Amsters, 2016; Yorkston, Baylor, & Mach, 2017). For example, restricted communicative participation in adults with multiple sclerosis was associated with lower level of speech usage, higher levels of education, problems in cognitive communication function, lower levels of physical abilities, and more severe speech symptoms (Yorkston et al., 2014). In individuals with Parkinson's disease, perceived level of impairment was the strongest predictor of lessened participation, suggesting individuals' beliefs about their disorders may be more impactful on

participation than physical limitations caused by their disorders (McAuliffe, Baylor, & Yorkston, 2017).

### *The Potential Impact of Stuttering on Communicative Participation*

The impact of stuttering on communicative participation has been examined extensively in previous research involving qualitative content analysis and questionnaires that included items evaluating participation restrictions experienced by PWS (Boyle, 2013b, 2015; Craig, Blumgart, & Tran, 2009; Plexico, Manning, & Levitt, 2009a, 2009b). However, it should be clarified that no previous research in this area has used the CPIB or its short form, discussed in the previous section, to evaluate the construct of communicative participation in adults who stutter. Although attitudinal scales in the area of stuttering such as the Overall Assessment of the Speaker's Experience of Stuttering (Yaruss & Quesal, 2006), the Unhelpful Thoughts and Beliefs About Stuttering (UTBAS; St. Clare et al., 2009), and the Self-Stigma of Stuttering Scale (Boyle, 2013a) contain items that tap into the construct of communicative participation, they are bundled together with other constructs, making focused measurement of communicative participation challenging.

Research suggests that many PWS develop a fear and avoidance of social situations that require them to verbally express themselves (Bricker-Katz, Lincoln, & Cumming, 2013; Bricker-Katz, Lincoln, & McCabe, 2010; Erickson & Block, 2013). The impact of stuttering on communicative participation occurs across the life span, from childhood and adolescence into early and late adulthood. Erickson and Block (2013) found that the ability of adolescents to communicate effectively in daily activities that involved speaking was significantly impacted by their self-perceived competence and apprehension in the area of communication. Bricker-Katz et al. (2013) found that the pressures and communication demands of the workplace on adults who stutter led to feelings of self-doubt, limited communication in response to fear of stuttering, refusal of promotions, and anticipated negative evaluation from others. Bricker-Katz et al. (2010) found that many older individuals who stutter continued to experience negative impacts later in life, including a fear of speaking that resulted in limitations in participation. It is likely that these limitations and restrictions negatively impact the ability of PWS to fulfill certain social roles and their satisfaction in those roles.

Some previous research studies have shown that PWS exhibit significantly elevated levels of anxiety, distress, and negative affect compared to fluent controls (Craig, Blumgart, & Tran, 2015; Tran, Blumgart, & Craig, 2011). It is possible that negative emotions experienced by some PWS (e.g., anger, frustration, embarrassment, alienation, depression) could be linked to failed attempts to communicate or avoidance of social penalties resulting from stuttering (Iverach, Rapee, Wong, & Lowe, 2017; Tran et al., 2011). The use of safety behaviors (avoiding certain words, decreasing overall

speech output, etc.) by PWS has been reported as a way to minimize negative feedback received from the public (Iverach & Rapee, 2014; Lowe et al., 2017). The use of such safety behaviors as coping strategies has been found to result in decreased communicative participation in PWS (Plexico et al., 2009a, 2009b). Many PWS attempt to conceal their stuttering from listeners altogether (Butler, 2013; Constantino, Manning, & Nordstrom, 2017). If total concealment is not possible, PWS often try to minimize the frequency and extent of their outward stuttering (Plexico et al., 2009a). These avoidances and safety behaviors typically would be expected to reduce overall communicative participation. Because the literature indicates that PWS are at risk for reduced communicative participation, it is important to examine potential variables that would have the ability to predict communicative participation in PWS. Previous research has identified both psychosocial and physical variables that may be relevant for communicative participation.

### ***Variables Potentially Relevant for Communicative Participation in PWS***

“Self-esteem” is one variable that could be related to communicative participation. Self-esteem refers to an individual’s assessment of self-regard, self-worth, and self-competence that is stable and relatively invariable over time and across contexts (Coopersmith, 1967; Rosenberg, 1965). Children, adolescents, and adults who stutter have not reported their self-esteem as significantly lower than normative data (Blood, Blood, Tellis, & Gabel, 2003; Yovetich, Leschied, & Flicht, 2000). Boyle (2013b) found that self-esteem in adults who stutter was comparable to normative data, even though PWS clearly live with a condition that is thought to be stigmatized (St. Louis, 2015). In addition, Boyle (2015) found that higher ratings of self-esteem were related to increased overall quality of life in adults who stutter. Research has also shown that increased self-esteem is significantly associated with reduced feelings of self-stigma among adults who stutter (Boyle, 2013a). Therefore, it could be the case that higher self-esteem is a protective factor in a person’s willingness to communicate and might therefore be linked to communicative participation.

“Self-efficacy” is another variable that is expected to predict communicative participation in PWS. Self-efficacy refers to a person’s self-perceived ability to successfully perform a particular task or behavior (Bandura, 1986). Although self-efficacy beliefs can be domain specific, they coexist and are presumed to work together to influence psychosocial outcomes (Caprara, Steca, Cervone, & Artistico, 2003). Self-efficacy has been proposed to offer some protections against the pervasive effects of chronic stuttering in PWS (Boyle, 2013b; Craig, Blumgart, & Tran, 2011). Craig et al. (2011) found that self-efficacy was the strongest predictor for psychological resilience (i.e., the ability to adjust and cope in the face of challenges and stressors) demonstrated by PWS. In a longitudinal study, Craig et al. (2015) found that increased self-efficacy explained a significant amount of variance in positive mood changes of PWS over time. Boyle

(2015) found that self-efficacy was a significant predictor of quality of life in adults who stutter, above and beyond physical speech disruption severity. Recent research has supported the notion that self-efficacy is related to increased quality of life in PWS (Carter, Breen, Yaruss, & Beilby, 2017). Boyle (2013a) also found that increased self-efficacy was significantly related to reduced levels of self-stigma in adults who stutter. Interestingly, as a group, PWS have reported higher levels of general self-efficacy than normative data for adults who do not stutter (Boyle, 2013b). From this literature, therefore, it is reasonable to suspect that self-efficacy could be an important factor that contributes to the communicative participation of PWS.

“Social support” is another variable that is expected to be related to communicative participation. Social support is said to encompass the intangible (informational or emotional support) and tangible (physical or financial aid) resources afforded by social relationships (Cohen & Hoberman, 1983; Heitzmann & Kaplan, 1988). It has also been determined to be an important buffer to psychosocial stressors (Pearson, 1986). Increased social support has been identified as a predictor of quality of life (Boyle, 2015) and psychological resilience (Craig et al., 2011) in adults who stutter, whereas low perceived social support is associated with increased negative affect in adults who stutter (Blumgart, Tran, & Craig, 2014; Craig et al., 2015). In addition, self-help/support group participation has been linked to positive psychological outcomes including reduced self-stigma and increased self-efficacy and self-esteem (Boyle, 2015). Unfortunately, PWS as a group have reported lower levels of self-perceived social support compared to fluent controls (Blumgart et al., 2014). It is likely, therefore, that social support is relevant for the communicative participation of adults who stutter.

In addition to psychosocial variables, the severity of physical speech disruption demonstrated by PWS is relevant to consider in its ability to predict communicative participation. Boyle (2015) found that increased levels of self-rated speech disruption severity were significantly associated with reduced quality of life in adults who stutter. In addition, increased stuttering severity has been shown to predict a more negative impact of stuttering on a person’s life (Iverach, Lowe, et al., 2017). However, other studies have not found significant associations between stuttering severity and psychosocial outcomes. For example, Craig et al. (2009) found that stuttering severity was not significantly associated with any domain of quality of life (although emotional health was slightly reduced for individuals with increased stuttering severity). Manning and Beck (2013) did not find significant correlations between stuttering severity and psychological variables including anxiety, social anxiety, or depression. One explanation for the discrepancies between studies is the measure of stuttering severity used. Boyle (2015) and Iverach, Lowe, et al. (2017) utilized self-rating scales, whereas the other studies used percentage of syllables stuttered to measure severity of speech disruption. Therefore, although past results are equivocal, it is possible that physical stuttering severity is related to communicative participation in adults who stutter.



## Purpose of the Current Study

Taken altogether, the review above suggests that evaluating communicative participation with scientifically validated scales such as the CPIB is important and relevant for the scope of practice of clinicians and researchers working with individuals with communication disorders. Still, investigation of communicative participation using dedicated and focused scales such as the CPIB has not been conducted to date with a large sample of adults who stutter. Furthermore, predictors of communicative participation in PWS are not well known. It was of interest in this study to determine predictors of communicative participation in PWS. Specifically, we were focused on determining whether variables of self-esteem, self-efficacy, and social support were predictive of communicative participation beyond the contributions of demographic and speech-related variables (e.g., severity of physical speech disruption). A secondary purpose of the study was to analyze how social roles ability and social roles satisfaction correlated with communicative participation and physical speech disruption severity in PWS. Based on previous findings (Yorkston et al., 2014), it was hypothesized that psychosocial variables of self-esteem, self-efficacy, and social support would be predictive of communicative participation above and beyond contributions made by demographic and speech-related variables. It was also hypothesized that social roles ability and satisfaction would be more strongly related to communicative participation than physical speech disruption severity. The results of these analyses could help to identify PWS who are at risk for communication restrictions and indicate potential therapy targets that would help alleviate those restrictions.

## Method

### Participants

The data in this study come from 339 adults who stutter. Participants in this study were recruited from Board Certified Specialists in Fluency Disorders, SLPs advertised as having an interest in stuttering via the Stuttering Foundation website, and self-help support group leaders of adult chapters of the National Stuttering Association in the United States. Contact information from these professionals and support group leaders was obtained from public websites. These individuals were sent an e-mail requesting them to forward the survey link to clients, group members, or other acquaintances who stutter. The e-mails were sent three different times, with 1 week separating each contact, to maximize response rate. Also, the link to the survey was posted on several ASHA Community Sites with a request to share the survey. Participants were included in the study if they were age 18 or older and confirmed that they stutter. It should be noted that there were five participants reporting having stuttered for 5 years or fewer and 10 reporting having stuttered for 9 years or fewer. This indicates that these individuals had a later age of onset than is typically observed. These individuals were included in the analysis, however, because

there is no evidence to date suggesting that years of stuttering is an important predictor of self-esteem, self-efficacy, or social support. In addition, previous research has found no differences in self-esteem, self-efficacy, or social support across different age groups of PWS (Boyle, 2015), and therefore, the inclusion of these individuals with a later age of onset and fewer years stuttering was not expected to bias the results. Although records indicated that 533 individuals opened the survey link, 194 of those individuals were excluded because they did not meet the inclusion criteria above or did not complete a sufficient amount of each scale of interest. Only participants who completed at least 70% of the items in the scales of interest were included in the various data analyses (i.e., no more than three items in a 10-item scale could be missing when calculating averages; Schwarzer, 2005). This resulted in a final sample size of 339 adults who stutter.

A summary of participants' demographic information can be seen in Table 1. The age of the participants ranged from 18 to 87 years, although most were young adults, and number of years stuttering ranged from 1 to 85 years. There were more men than women, and the sample was primarily made of individuals identifying as Caucasian. Most participants had experience attending therapy for stuttering as well as participating in self-help support groups for stuttering. Regarding living situation, most of the participants reported

**Table 1.** Demographic statistics for participants.

Demographic variable	% or M (SD)
Age	37.95 (15.56)
No. of years stuttering	33.11 (16.44)
Sex	
Female	31.7%
Male	67.7%
Nonbinary/third gender	0.3%
Prefer not to say	0.3%
Ethnicity	
African American	5.0%
Asian American	6.5%
Caucasian	74.5%
Hispanic American	7.5%
Other	5.3%
Prefer not to say	1.2%
Prior experience attending stuttering therapy	
Yes	95.3%
No	4.7%
Prior experience attending self-help/ support groups for stuttering	
Yes	80.1%
No	19.9%
Living situation	
Living alone	19.3%
Living with others	80.7%
Higher education experiences (having college or postgraduate degrees)	
Yes	78.9%
No	21.1%
Employed for wages	
Yes	55.6%
No	44.4%

living with at least one other person. A majority of participants reported having higher education experiences, including obtaining college degrees or postgraduate degrees, and most reported being employed for wages at the time of the study.

## Measures

### Communicative Participation

Communicative participation was measured using the CPIB Short Form (Baylor et al., 2013). This scale is designed to measure the extent to which the condition (in this case stuttering) interferes with participation (e.g., expressing knowledge, information, ideas, or feelings; Baylor et al., 2013). Importantly, this interference can be due to impaired ability, psychological, or contextual factors. The short form is a 10-item form based on the original 46-item bank, with questions such as “Does your condition interfere with communicating when you need to say something quickly?” and “Does your condition interfere with asking questions in a conversation?” Response options on the short form range from 3 (*not at all*) to 0 (*very much*), with a possible total summary score ranging from 0 to 30. Higher scores are more favorable and indicate more communicative participation. Baylor et al. (2013) recommended converting the total summary scores to a logit scale or translation of scores into *T* scores. The recommendation for this scoring conversion was made because the logit scale better approximates equal intervals, allowing for more valid mathematical operations. Also, valid comparisons across different item sets would be possible with this conversion. In this study, *T* scores were used. These *T* scores range from 24.20 (indicating the most interference possible) to 71 (indicating no interference), with mean of 50 and standard deviation of 10 based on the calibration sample used to validate the item bank (Baylor et al., 2013). The psychometric properties of the scale including evidence of reliability and validity of the items are described in an article by Baylor et al. (2013).

### Self-Esteem

Three items representing the construct of self-esteem were selected from the “self-esteem” section of the Empowerment Scale (Rogers, Chamberlin, Ellison, & Crean, 1997). These items intend to measure how participants feel about themselves and their sense of personal self-worth. Items included “I have a positive attitude toward myself,” “I feel I am a person of worth, at least on equal basis with others,” and “I feel I have a number of good qualities.” Response options for each question range from 1 (*strongly disagree*) to 4 (*strongly agree*). Scores were averaged and can range from 1 to 4, with higher scores representing greater self-esteem. It should be noted that the Empowerment Scale was not given in its entirety because many items in the scale measure different constructs beyond self-esteem, including righteous anger, community activism, and optimism. Because only self-esteem was of interest in this study, only the items measuring self-esteem were utilized. The previous reports

of good reliability of items in the overall scale ( $\alpha = .86$ ; Rogers et al., 1997) could not be assumed for the selected items used in the current study and therefore had to be established (see Results section).

### Self-Efficacy

Self-efficacy was measured with the General Self-Efficacy Scale Short Form (Romppel et al., 2013). This scale intends to measure the extent to which individuals feel that they can control environmental challenges and demands by taking action. Although self-efficacy is often thought of as domain specific, this scale measures the general construct of confidence in the ability to handle difficult situations. For example, scale items ask for participants’ perceptions of their own resourcefulness and ability to handle unexpected events and circumstances. Scores were averaged and can range from 1 (*not at all true*) to 4 (*exactly true*), with higher scores representing greater self-efficacy. Internal consistency of the items in the scale has been adequate to good in previous research ( $\alpha$  ranging from .79 to .88), and construct validity has been supported by the scale’s negative association with symptoms of depression and anxiety and positive association with social support and mental health (Romppel et al., 2013).

### Social Support

Perceived social support was measured with three items from the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988). This group of items spanned across different domains measured in the scale that gauge perceived level of social support (e.g., receiving help and emotional support, sharing feelings, etc.) from significant others, family members, and friends. We chose one item from each domain (i.e., significant other, family, friends) that had the strongest correlation to the overall summary score of the scale. Scores were averaged across the three items and range from 1 (*very strongly disagree*) to 7 (*very strongly agree*). The average of these three items correlates very highly ( $r = .98$ ) with the average obtained for the overall scale (Boyle, 2015) and therefore supports the notion that these three items could be used reliably to approximate results from the full scale. Internal reliability for scale items has been reported as high ( $\alpha$  ranging between .85 and .91), and test–retest reliability has been strong ( $r$  coefficients between .72 and .85; Zimet et al., 1988). Construct validity of the scale is supported through its significant negative correlations with depression and anxiety (Zimet et al., 1988). Because this study utilized only a subset of items from the original scale, the authors analyzed the reliability of these items (see Results section).

### Physical Speech Disruption

Severity of physical speech disruption was ascertained through self-report measures that have been widely used in the stuttering literature with good reliability (i.e., high inter- and intrajudge agreement on ratings and strong correlation with percentage of syllables stuttered; O’Brian, Jones, Packman, Menzies, & Onslow, 2011; O’Brian, Packman,

& Onslow, 2004). Participants were asked to rate their typical stuttering severity across eight different speaking situations (e.g., talking in front of a group of people, talking to a stranger, talking on the phone). In addition, the authors modified the instructions to specify that stuttering severity in this case referred to “the level of physical disruption in your speech (such as repetitions of sounds, syllables, or words; prolongations of sounds; and blocks in which the air and voice stops unexpectedly), tension, effort, or physical movements, that you think are noticeable on the surface for the majority of the day. It does not refer to the impact of the disorder as a whole on your life.” This description was added so that participants focused on the physical domain of their stuttering only. This was important because the construct of interest was physical speech disruption severity. Response options range from 1 (*no stuttering*) to 9 (*extremely severe stuttering*), with higher scores representing more severe speech disruption. Because physical speech disruption also includes length of disfluencies (Riley, 2009), participants were asked how they would rate the duration of their longest stuttering moments for the majority of the day. Response options for this item ranged from 1 (*less than half a second*) to 9 (*1 min or more*) with labeled increments of increasing amounts of time in between those extremes. Participants’ duration of disfluencies score was added to their average score for the eight items described previously to reflect a composite score of physical speech disruption severity. This composite score included self-perceived severity of disfluencies, tension, effort, secondary features, as well as duration of disfluencies, resulting in possible scores of 2–18 with higher scores representing more severe physical speech disruption. The inclusion of duration of disfluencies in the assessment of stuttering reflects previous research recommending that length of disfluencies be integrated into severity scores (e.g., weighted measures of stuttering indices; Ambrose & Yairi, 1999). It should be noted that duration of physical speech disruption has been previously integrated into severity measures specific to clinician-rated speech sample analysis (e.g., Ambrose & Yairi, 1999; Riley, 2009). To our knowledge, this is the first time a self-rated measure of duration has been integrated into a self-report measure of physical speech disruption severity.

### Speech Usage

The Levels of Use Speech Rating Scale (Baylor, Yorkston, Eadie, Miller, & Amtmann, 2008) was administered to determine participants’ perceptions of the typical speech demands that they face in their everyday life. Participants were able to describe speaking demands as undemanding, intermittent, routine, extensive, or extraordinary. Definitions of each category were provided to participants.

### Social Roles

Two questions from the PROMIS Global Health Questionnaire (Hays, Bjorner, Revicki, Spritzer, & Cella, 2009) assessed participants’ perceptions of social roles ability (“In general, please rate how well you carry out your usual social activities and roles—This includes activities at

home, at work and in your community, and responsibilities as a parent, child, spouse, employee, friend, etc.”) and social roles satisfaction (“In general, how would you rate your satisfaction with your social activities and relationships”).<sup>1</sup> Response options for both items range from 1 (*poor*) to 5 (*excellent*), with higher scores representing better social roles abilities and satisfaction. It should be noted that these two items were reported separately and were not averaged together.

### Demographic Variables

Demographic information collected from participants that was included in statistical analyses included age, sex, living situation (dichotomized by living alone or with at least one other person), employment status (dichotomized by being employed for wages or not), and education level (dichotomized by obtaining a degree in higher education or not), years of stuttering, history of attending stuttering therapy, and history of attending self-help support groups for stuttering.

### Procedure

This study employed anonymous web survey methodology using Qualtrics Survey Research Software (Qualtrics, 2017). Web surveys have the benefit of being able to reach participants in various regions of the country without personally identifying information attached to responses. The study utilized a cross-sectional design with a combination of convenience sampling and snowball sampling in order to maximize the sample size. The study was approved by the authors’ institutional review board as well as the National Stuttering Association Research Committee before participants were recruited. After reading an overview of the study and implied consent form that described the voluntary and anonymous nature of the survey, participants completed the scales described above. Data were collected over approximately a 3-month period from January to April 2017. Participants in this research study were a part of a larger research project intending to measure self-stigma and physical health outcomes of adults who stutter (Boyle & Fearon, 2018). Participants in this study represent a subsample from that project, which had different research aims, variables of interest, and hypotheses.

### Data Analysis

Data recorded by Qualtrics were exported to SPSS Statistics Version 22. The data were checked for any possible data entry or coding errors made by the authors that could have resulted in outlying data, and none were found. Preliminary statistical analyses included obtaining Cronbach’s coefficient alpha to assess internal consistency of all sets of items intending to measure variables of interest. Also, descriptive statistics including means, standard deviations, and

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ranges for each variable of interest were determined. Total summary scores from the CPIB were converted into *T* scores. Primary analysis included obtaining bivariate Pearson and Spearman correlations between variables depending on measurement type. Bivariate correlation analysis was conducted to identify potential relationships between demographic (age, sex, living situation, education, employment), speech-related variables (speech usage, years stuttering, physical speech disruption severity, stuttering treatment history, stuttering support group history), predictor (self-esteem, self-efficacy, social support), and criterion variables (communicative participation). Correlations between all variables were examined using Pearson and Spearman correlations, depending on variable type (e.g., Spearman correlations were calculated for items with ordinal response options such as speech usage and social roles items). Point biserial correlations were computed for analyses involving dichotomous variables (e.g., sex, living situation, education, employment). As mentioned earlier, demographic or stuttering-related variables that were significantly correlated with the predictor or outcome variables of interest were added as covariates in the regression analysis. In addition, the correlational analysis helped to determine if any variables were redundant (i.e., correlations greater than .70) and could therefore be removed from the regression analysis.

Hierarchical regression was used because the primary purpose of the study was to determine if self-esteem, self-efficacy, and social support were predictive of communicative participation above and beyond demographic and speech-related variables (Petrocelli, 2003). According to Cohen and Cohen (1983), the principal of causal priority can help clarify the order of variables inserted into hierarchical regression models. According to this principal, the order of predictor variable entry is guided by causal flow (i.e., causes should be entered before their effects). These guidelines suggest that static variables such as demographic variables should be entered on Step 1. Therefore, sex, living situation, education, and employment were entered on Step 1. More dynamic variables (e.g., speech and stuttering-related variables) should be entered in subsequent steps. Furthermore, no independent variables entered later should be believed to cause an independent variable that came earlier. Therefore, the understanding that speech disruption and other speech-related variables could theoretically impact psychosocial variables such as self-esteem, self-efficacy, and social support provides theoretical guidance for the order of variable entry. Speech-related variables including speech usage, years stuttering, treatment history, self-help support group history, and physical speech disruption severity were entered on Step 2, and self-esteem, self-efficacy, and social support were entered simultaneously as the predictor variables in Step 3. Communicative participation was the outcome variable of interest. Variance inflation factor was examined in the regression analysis, and multicollinearity was not a concern (values were between 1.0 and 1.5 for all variables).

Finally, Spearman correlations were calculated to determine the relationships between social roles variables and communicative participation and physical speech

disruption. Effect sizes were also reported for all significant correlation coefficients according to the widely used guidelines of Cohen (1992; i.e., product-moment *r* coefficients between .10 and .29 are considered small, between .30 and .49 are considered medium, and > .50 are large).

In this study, possible Type I errors were controlled for by analyzing only one dependent variable in regression analysis and selecting predictor variables that were theoretically relevant to the dependent variable. All correlational and regression results reported tested *a priori* hypotheses. In addition, the types of regression analyses utilized controlled for contributions from other variables within the model, and thus, the alpha values did not require modification. Therefore, for the primary analyses of interest in this study, the criterion of  $\alpha = .05$  was utilized to determine statistical significance. The possibility of Type II error was minimized by recruiting a large sample and using valid and reliable self-report measures. A post hoc power analysis conducted with GPower Version 3.1.2 (Faul, Erdfelder, Buchner, & Lang, 2009) demonstrated that power was > 0.99 for the regression model used in the study, given the sample size obtained and number of predictors utilized to detect at least a medium effect size.

## Results

### *Preliminary Analyses*

Item analysis was conducted on sets of items intending to measure the main constructs of interest. Cronbach's coefficient alpha was calculated for each construct measured with multiple items in order to assess the internal consistency of those items. Internal consistency was judged to be good to excellent for items measuring physical speech disruption severity ( $\alpha = .87$ ), self-esteem ( $\alpha = .86$ ), self-efficacy ( $\alpha = .86$ ), social support ( $\alpha = .81$ ), and communicative participation ( $\alpha = .93$ ), according to standards recommended by Nunnally (1978). Therefore, it was justified to obtain and report overall summary scores from items comprising these constructs.

Descriptive statistics and frequency counts were also calculated for each variable of interest. Regarding speech usage, 5.4% rated their speech needs as "undemanding," 21.9% reported "intermittent," 39% reported "routine," 22.2% reported "extensive," and 11.4% reported "extraordinary" speech demands. In addition, most rated their typical level of speech disruption (i.e., occurrence of repetitions, prolongations, blocks, in addition to tension, effort, and secondary behaviors) as moderate ( $M = 4.8$ ,  $SD = 1.5$ ), and most reported the duration of their longest disfluencies as typically lasting between 0.5 and 2 s. Table 2 displays means, *T* scores, standard deviations, possible ranges, and observed ranges for physical speech disruption severity, self-esteem, self-efficacy, social support, and communicative participation. Note that the "physical speech disruption severity" values shown in Table 2 represent participants' combined ratings of self-perceived severity of speech disruption (tension, effort, frequency of stuttering, secondary



**Table 2.** Summary data (descriptive statistics) and interpretations for outcome and predictor variables.

Variable	<i>M</i> or <i>T</i> score	<i>SD</i>	Range observed	Range possible	Interpretation
Physical speech disruption severity	8.9	3.0	2.13–18	2–18	Higher scores represent greater physical speech disruption
Self-esteem	3.3	0.6	1–4	1–4	Higher scores represent greater self-esteem
Self-efficacy	3.1	0.5	1–4	1–4	Higher scores represent greater self-efficacy
Social support	5.4	1.4	1–7	1–7	Higher scores represent greater social support
Communicative participation	50.36	8.83	24.2–71	24.2–71	Higher scores represent greater communicative participation

*Note.* Summary statistics for communicative participation represent *T* scores as recommended by Baylor et al. (2013). Averages were obtained for all other variables displayed.

characteristics) and self-reported length of disfluencies. Therefore, the average of 8.9 for that variable reflects moderate physical speech disruption overall for most participants. It is worthwhile to highlight the fact that the mean *T* score of adults who stutter in this sample was very similar to the mean of 50 reported by Baylor et al. (2013) based on data from 701 individuals with multiple sclerosis, Parkinson’s disease, amyotrophic lateral sclerosis, and head and neck cancer.

### Primary Analyses

Results indicated that all demographic, speech and stuttering-related, and predictor variables were significantly correlated with at least one of the variables of interest. Table 3 shows correlation coefficients between all variables. It should also be noted that years of stuttering and age were highly correlated, as would be expected ( $r = .96, p < .001$ ), and therefore, age was omitted from regression analysis because its correlation to communicative participation was lower in strength. No other pairs of correlations were above .70, and therefore, all other variables were utilized in the regression analysis. There are some significant correlations seen in Table 3 worth noting. First, communicative participation demonstrated significant positive correlations with age,

education, speech usage, and stuttering self-help/support group history (small effect sizes), as well as self-esteem, self-efficacy, and social support (medium effect sizes), and a significant negative correlation with physical speech disruption (large effect size). History of participating in self-help/support groups for stuttering was significantly correlated with increased self-esteem (small effect size). Also, increased speech usage was significantly and positively correlated with education status and employment (small effect sizes), self-esteem (medium effect size), self-efficacy (medium effect size), and social support (small effect size) and negatively correlated with physical speech disruption severity (small effect size). Physical speech disruption severity was significantly and negatively correlated with age, education, self-efficacy, and social support (all small effect sizes), as well as self-esteem (medium effect size).

Results of the hierarchical regression analysis revealed that, after controlling for demographic and speech-related variables, self-esteem,  $t(303) = 3.34, p = .001$ , self-efficacy,  $t(303) = 3.07, p = .002$ , and social support,  $t(303) = 3.05, p = .002$ , significantly predicted communicative participation. Self-esteem, self-efficacy, and social support accounted for an additional 8.3% of the variance in communicative participation beyond the variance explained by demographic and speech-related variables (see Table 4). The overall

**Table 3.** Bivariate correlations between demographic, speech and stuttering-related, predictor, and criterion variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. CPIB	—												
2. Age	.26***	—											
3. Sex	-.03	.10	—										
4. Living situation	.01	-.05	-.07	—									
5. Education	.25***	.17**	-.01	-.02	—								
6. Employment	.04	-.08	.05	-.08	.22***	—							
7. Speech usage	.28***	.06	-.14*	.07	.16**	.17**	—						
8. Years stuttering	.27***	.96***	.10	-.03	.16**	-.08	.07	—					
9. Treatment history	.01	-.11	.02	-.03	.03	.07	.02	-.07	—				
10. Self-help history	.16**	.08	-.07	.10	.11	-.01	.02	.09	.08	—			
11. Physical speech disruption	-.63***	-.24***	.00	-.08	-.19**	-.01	-.20***	-.24***	-.01	-.06	—		
12. Self-esteem	.46***	.10	-.04	.15**	.15**	.04	.31***	.12*	.04	.13*	-.31***	—	
13. Self-efficacy	.40***	.04	.02	.02	.23***	.11	.32***	.08	.02	.04	-.26***	.47***	—
14. Social support	.38***	.08	-.02	.29***	.11*	-.01	.27***	.10	.02	.06	-.24***	.38***	.27***

*Note.* CPIB = Communicative Participation Item Bank. Em dashes replace correlations of 1.0 between identical variables. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

**Table 4.** Hierarchical regression analysis of self-esteem, self-efficacy, and social support on communicative participation.

Step	Variable	$\beta$	<i>t</i> for within-step predictors	$\Delta R^2$ for step	$\Delta F$ for step	Cumulative $R^2$
1	Sex	.00	0.01	.082	6.91***	.082
	Living situation	.10	1.90			
	Education	.27	4.83			
	Employment	-.01	-0.10			
2	Speech usage	.17	3.77***	.367	40.67***	.448
	Years stuttering	.12	2.48*			
	Treatment history	-.00	-0.09			
	Self-help history	.09	2.12*			
	Physical speech disruption	-.52	-11.50***			
3	Self-esteem	.16	3.34**	.083	17.96***	.532
	Self-efficacy	.14	3.07**			
	Social support	.14	3.05**			

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

model accounted for 53.2% of the variance in communicative participation.

Finally, it was of interest to analyze how social roles variables were related to communicative participation and physical speech disruption severity. One item from the PROMIS Global Health Questionnaire (Hays et al., 2009) measured social roles ability, and another item from that same scale measured social roles satisfaction. Table 5 provides descriptive data for percentages of participants selecting certain response options for both of these questions. It can be seen that most participants reported good or very good ability to carry out their social roles, and most reported good or very good satisfaction with social activities and relationships. Bivariate Spearman correlations were calculated between variables of communicative participation, social roles ability, social roles satisfaction, and physical severity of speech disruption. There was a significant positive relationship between communicative participation and social roles ability ( $r = .57, p < .001$  [large effect size]) and also between communicative participation and social roles satisfaction ( $r = .58, p < .001$  [large effect size]). There were significant negative relationships between physical speech disruption severity and social roles ability ( $r = -.39, p < .001$  [medium

effect size]) and physical speech disruption severity and social roles satisfaction ( $r = -.38, p < .001$  [medium effect size]). Correlations were therefore of greater magnitude (larger effect sizes) between social roles variables and communicative participation than they were for social roles variables and physical speech disruption.

## Discussion

The purpose of this study was to determine if self-esteem, self-efficacy, and social support predicted communicative participation in adults who stutter, above and beyond demographic and speech-related variables. It was hypothesized that these psychosocial variables would be significant predictors of communicative participation over and above the variance accounted for by demographic and speech-related variables. That hypothesis was supported in this study. These findings support previous findings reported for individuals with multiple sclerosis (Baylor, Amtmann, & Yorkston, 2012; Baylor et al., 2010; Yorkston et al., 2014), which demonstrated that a variety of demographic and symptom-related variables, in addition to speech impairment severity, significantly predicted communicative

**Table 5.** Summary data for social roles ability and social roles satisfaction.

Variable	Question wording	Response selected	<i>n</i>	%
Social roles ability	In general, please rate how well you carry out your usual social activities and roles. (This includes activities at home, at work, and in your community, and responsibilities as a parent, child, spouse, employee, friend, etc.)	Excellent	55	16
		Very good	143	42
		Good	93	28
		Fair	42	12
		Poor	5	1
Social roles satisfaction	In general, how would you rate your satisfaction with your social activities and relationships?	Excellent	33	10
		Very good	123	36
		Good	86	25
		Fair	66	20
		Poor	30	9

Note. Percentages are rounded. Items come from the Patient-Reported Outcomes Measurement Information System Global Health Questionnaire (Hays et al., 2009). ©2008–2018. Reprinted with permission, PROMIS Health Organization. PROMIS is a registered trademark of HHS.

participation. The current findings also support earlier work by Boyle (2015) that reported two psychosocial variables, social support, and self-efficacy, as predictive of quality of life in adults who stutter beyond what was accounted for by demographic and stuttering-related variables, including severity of speech disruption. A secondary purpose of this study was to determine correlations between communicative participation, social roles variables, and physical speech disruption. The hypothesis that social roles variables (social roles ability and social roles satisfaction) would be more strongly related to communicative participation than physical speech disruption was also supported in this study. Again, these results are consistent with those of Yorkston et al. (2014), who reported similar findings among individuals with multiple sclerosis.

In this study, years of stuttering, physical speech disruption severity, self-esteem, self-efficacy, and social support were unique and significant predictors of communicative participation. Specifically, increased communicative participation was found to be associated with longer history of stuttering, less physical speech disruption severity, and increased self-esteem, self-efficacy, and social support. The results support the notion that self-rated severity of speech disruption is related to negative outcomes such as quality of life (Boyle, 2015; Iverach, Lowe, et al., 2017). The finding that a longer history of stuttering was related to increased communicative participation could be related to a higher degree of acceptance of stuttering as a chronic condition or the increase in use of adaptive coping strategies that could be learned over several years. Smart (2001) discussed a stage model of coping with disabilities where integration, acceptance, and transcendence of one's disability come after stages of shock, defensiveness, depression, and personal questioning. Therefore, the findings may reflect increased social and emotional adaptation to stuttering over time. The results of this study also support earlier findings that identified the importance of self-efficacy and social support for predicting resilience to stuttering and for buffering the negative impacts of stuttering (Blumgart et al., 2014; Craig et al., 2011). Importantly, self-esteem, self-efficacy, and social support explained additional and significant variance beyond what was accounted for by physical speech disruption severity.

### ***Clinical Applications of Findings***

Although targeting reduced severity of physical speech disruption with speech modification approaches can be a worthy treatment goal and one that has been shown to reliably increase fluency in adults who stutter (Baxter et al., 2015; Bothe, Davidow, Bramlett, & Ingham, 2006; Herder, Howard, Nye, & Vanryckeghem, 2006), there are additional factors that SLPs should take into account in order to understand the impact of stuttering on communicative participation. The present findings demonstrate that variables such as self-esteem, self-efficacy, and social support are relevant for communicative participation of PWS as well. The results of this study could help to identify PWS who are at risk for

communication restrictions (i.e., clients with shorter history of stuttering; increased levels of physical speech disruption; and lower levels of self-esteem, self-efficacy, and social support) and indicate potential therapy objectives that would help alleviate those restrictions.

To effectively change clinical practice and provide more holistic services to PWS, concrete modifications need to be made in assessment and treatment processes. SLPs should feel competent in their ability to handle these clinical duties. Psychosocial variables can be measured using scales that document the life impact of stuttering (Overall Assessment of the Speaker's Experience of Stuttering; Yaruss & Quesal, 2006), unhelpful thoughts and beliefs about stuttering (Unhelpful Thoughts and Beliefs About Stuttering Scale; St. Clare et al., 2009), self-efficacy related to speech (Self-Efficacy Scale for Adults Stutterers; Ornstein & Manning, 1985), and self-stigma related to stuttering (Self-Stigma of Stuttering Scale; Boyle, 2013a). Scales that are not specific to stuttering but are relevant for communicative participation, as suggested in this article, could also be used (e.g., self-esteem, generalized self-efficacy, and perceived social support). The CPIB short form (Baylor et al., 2013) used in this study is another efficient method for assessing the important construct of communicative participation that could be used clinically. In fact, as this study has shown, CPIB scores may better reflect changes in social roles abilities and social roles satisfaction than self-ratings of physical speech disruption severity. These measures can be used to document treatment progress and outcomes in stuttering therapy.

Regarding treatment options that could be expected to improve communicative participation for PWS, clinicians could focus on modification of speech behavior to alter physical speech disruption severity (Bothe et al., 2006; Herder et al., 2006) in addition to other cognitive and affective strategies that could offer a holistic approach to improve communicative participation. For example, counseling approaches (Blood, 1995; Irani, Gabel, Daniels, & Hughes, 2012), psychological based therapies such as cognitive behavioral therapy (Helgadóttir, Menzies, Onslow, Packman, & O'Brian, 2009; Menzies, O'Brian, Lowe, Packman, & Onslow, 2016; Menzies et al., 2008), acceptance and commitment therapy (Beilby, Byrnes, & Yaruss, 2012), and mindfulness-based stress reduction (de Veer, Brouwers, Evers, & Tomic, 2009) have been shown to be effective for improving cognitive and affective challenges associated with stuttering. For example, Menzies et al. (2008) found that a combination of speech therapy and cognitive behavioral therapy was more effective than speech therapy alone in improving psychological functioning and reducing anxiety and avoidance of previously feared speaking situations in PWS. Those authors concluded that "speech restructuring alone is insufficient as a treatment of the 'whole person' who stutters" (p. 1462). The results of the current study support the notion that focusing only on severity of speech disruption is inadequate for understanding the entire communication experience of PWS. Because most SLPs realize the importance of participation-focused therapy but report barriers to implementation (Torrence et al., 2016), the

goals, activities, and outcome measures used in treatment approaches, such as those described above, can potentially help SLPs in their treatment planning with clients who stutter.

The results of the current study may also help to partially explain several well-known phenomena commonly observed in PWS. Some individuals exhibit covert stuttering (i.e., passing as a fluent speaker to avoid being identified as a PWS; Butler, 2013; Constantino et al., 2017; Murphy, Quesal, & Gulker, 2007), some remain fearful and anxious of stuttering occurring despite producing relatively fluent speech (Finn, Howard, & Kubala, 2005), and many relapse after being able to modify speech production during therapy (Bloodstein & Bernstein-Ratner, 2008; Craig, 1998). All of these phenomena have suggested that not all clients who stutter believe that their communication problem is solved when they are able to modify their speech production and reduce their outward physical impairment following speech therapy. That is, even if PWS seem to exhibit relatively fluent speech at any particular time, they may be struggling with a variety of barriers to social participation that are not apparent on the surface. There are clearly other factors to consider, and as the current findings suggest, the constructs of self-efficacy, self-esteem, and perceived social support are relevant for a more holistic perspective of the impact of stuttering on PWS.

### **Limitations and Future Research Directions**

There are some limitations to this study that can help guide future research efforts on this topic. First, all variables reported on in this study were obtained by self-report, including physical speech disruption severity. Self-reported ratings of physical speech disruption are different from data resulting from performance-based tasks (e.g., percentage of syllables stuttered from a speech sample). Future studies should attempt to compare different types of severity ratings and analyze their contributions to communicative participation. Furthermore, although the CPIB has been psychometrically analyzed, it has not been formally validated for PWS. Second, more variables could have been included in this analysis given that only a little over half of the variance in communicative participation was explained with the variables examined. Future studies should attempt to measure additional variables, including anxiety and depression. Third, it is possible that, because the participants in this study were recruited from SLPs and self-help leaders in stuttering, they felt differently about stuttering or themselves compared to PWS who have never sought help for stuttering. Therefore, it is difficult to know whether the results can generalize to the entire population of PWS. Finally, this study was cross-sectional and correlational in nature, and so no causal links between variables of interest can be made. Future work in this area could seek to understand the process of how communicative participation becomes restricted (or increases) over time in PWS using qualitative methods. Longitudinal prospective studies (Tran, Blumgart, & Craig, 2017, provide an example of this type

of design) that follow PWS (e.g., before, during, and after treatment) and document changes in communicative participation over time would also demonstrate the effectiveness of these approaches.

### **Conclusion**

It is important that SLPs anticipate and identify the many different factors that contribute to communicative participation restrictions in clients who stutter. With this knowledge, clinicians can also target these factors in treatment to reduce barriers to communicative participation. Focusing on psychosocial variables (e.g., personal and environmental factors), in addition to behavioral variables (e.g., speech production), will increase clinicians' ability to treat the disorder from a holistic perspective, as outlined in ASHA's scope of practice in speech-language pathology, that seeks to reduce activity limitations and participation restrictions and improve satisfaction with social roles and abilities in clients who stutter. Because improving communicative participation and quality of life of individuals with communication disorders is the overall objective of speech-language pathology services, identifying and targeting variables related to communicative participation is important for all populations treated by SLPs.

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